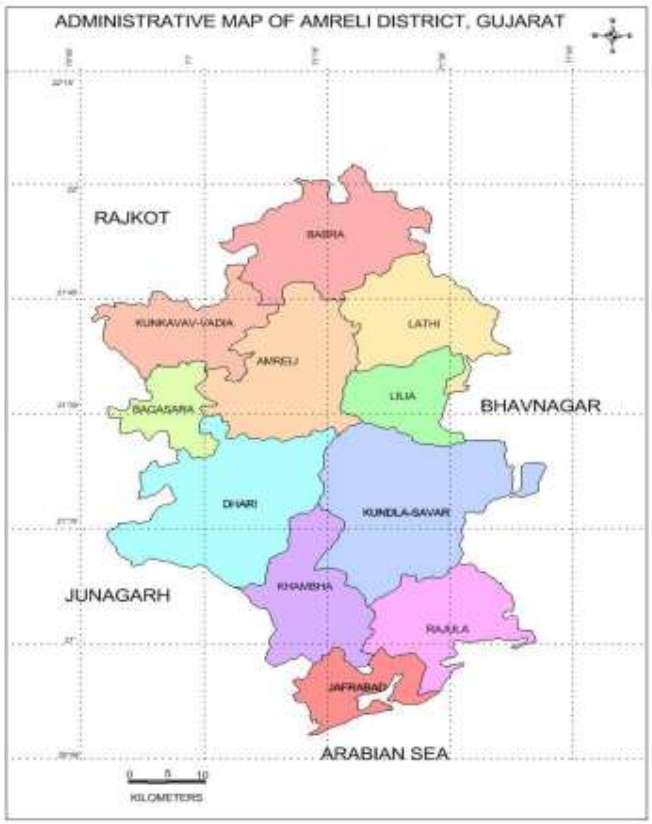
KVK Research and Impact Study

1. Impact Study of KVK, AMRELI



Amreli is a district located in the state of Gujarat, India. It is situated in the Saurashtra region, also known as Kathiawar. The district is named after the town of Amreli, which serves as its administrative headquarters. Amreli district is positioned between 20.47° and 21.33° north latitude and 70.17° and 71.40° east longitude.The climate of the district varies from moderately hot throughout the year except in winter. The climate is humid along with the coastal belt. The temperature varies from 8.01° Celsius in January to 43.7° Celsius in May. The average rainfall of last three years is 706 mm. It shares borders with the Arabian Sea to the southwest, Bhavnagar district to the east, Rajkot district to the north, and Gir Somnath district to the west. Amreli district is divided into eleven talukas (administrative subdivisions), namely Amreli, Babra, Bagasara, Dhari, Jafrabad, Khambha, Lathi, Lilia, Rajula, Savarkundla, and Vadia. As of the 2011 census, Amreli district had a population of around 15.04 lakh (1.504 million) people.Agriculture and Animal Husbandry is the main source of livelihood for the rural people of district. Total cropped area is 6,34,708 in hectares and the forest area is 265.18 in sq km (2021).cropping intensity is 119 per cent and major source of irrigation are bore well 36.3 per cent and canals 35.5 per cent. The major crops of Amreli district are cotton, groundnut, wheat, onion, cumin, and pulses. Due to difficulty in marketing the crops and support prices,

farmers are selling agricultural products directly to local market and not getting satisfactory income. Likewise, industries related to cotton ginning and pressing, oil mills contribute to the local economy.

About KVK AMRELI

The KVK Amreli is working to improve farmer livelihoods and farming in the district with the help of financial support from the ICAR and strong technical support from ATARI Pune and the Junagadh Agricultural University, Junagadh. JAU-Krishi Vigyan Kendra, Amreli, was established in 2005 and serves as the region's agricultural information resource hub. With various production units and demonstrations, such as a vermicompost and vermiwash unit, compost unit, rain and roof water harvesting structure, borewell recharge unit, horticulture production unit, nursery and solar pump unit, herbal garden, etc., KVK Amreli serves as an educational institution for farmers. In Amreli district, bio products like beauveriabassiana, tricodermaharzianum and metarhizium anisopliae were introduced as component of IPM during 2015 through regular and constant efforts of KVK Amreli. Popularise these bio product KVK Amreli sell it very nominal price rate. KVK has also succeeded in popularizing first elite varieties in pigeonpea (Vaishali, BDN-2 and GJP-1), (GG-20, GJG-22, GJG-31, GJG-32) groundnut, (GS-1 and GS-3) soyabean, (GM-4 and GAM-5) green gram, black gram (GU-1 and GU-2),sesame (GT-3, GT-4 and GJT-5),chickpea (GJG-3, GG-5, GJG-6), wheat (GW-366, GW-173, GJW-463, GW-451) and castor (GCH-7 and GCH-9). Use of micro nutrient in cotton, IPM in groundnut and chickpea, INM in onion, wheat, and cotton was successfully demonstrated. KVK Amreli trained the farmers in processing and packaging of turmeric and drumstick. KVK Amreli also providing quality seeds of wheat and chickpea. KVK Amreli has prepared 18 Whats group for continuous flow of information and also promoting Agriculture App like Agri media and Kisan Mitra. Many progressive farmers have supported KVK Amreli as they received district, state, and national accolades like the Innovative Farmer Award from the SEEG in Gujarat, Aspee Foundation and Mahindra and Mahindra,Rajatjaynti award by JAU, Junagadh etc.KVK Amreli run and successful implemented different projects like NFSM, NICRA, NMOOP, ARYA, ATIC, DAMU and PKVY.

1. Sector specific interventions by KVK AMRELI

1.1 Field crops

- The introduction of two groundnut varieties, GG-22, GJG-31 and GJG-32 has aided farmers in realizing yield assurance.
- Substituting better varieties of the local varieties of the following pulse crops: chickpea (GJG-3 and GG-5), pigeonpea (GJP-1), blackgram (GU-2), and greengram (GAM-5).

- Farmers were able to lower their cultivation costs by using eco-friendly IPM techniques to manage the main pests in groundnut, cotton and chickpea through demonstration activities.
- Adoption of intercropping system in cotton with sesame and groundnut with castor helped earn more income per unit area also reduce an input cost.
- Adoption of de-topping practice in cotton is the farmer friendly technology to get more number of bolls per plant.
- Use of micro-nutrient (Grade-4 EDTA) in cotton, groundnut and sesame has helped in quality yield production.
- Adoption of improved varieties like GT-3 and GJT-5 of sesame for summer cultivation increase yield.
- Promotion of high density planting method in cotton has increased the yield as it is helpful to maintain optimum population.
- The introduction of organic farming has reduced the cost of cultivation wheat, chickpea, and groundnuts while simultaneously strengthening the financial position of farmers.
- Use of 2 per cent urea at flowering stage in chickpea crop increase number of flowers and pods.
- Farmers were drawn to use pheromone traps as a part of IPM practices once they were more widely used in cotton (for pink bollworm) and Chickpea (for *Helicoverpaarmigera*).
- Replacing the over adopted SAU varieties with the improved varieties in wheat (GW-366, GW-173, GW-451 and GJW-463) and castor (GCH-7 and GCH-9).
- Demonstration GW-173 as early mature variety of wheat additional crop after cotton last picking at end of December.

1.2 Horticultural crops

- The farm income of farmers have doubled as a result of replacing the underperforming field crops with high value fruit and vegetable crops like dragon fruit, custard apple, lemon, drum stick, tomato, brinjal, chilli, Turmeric and onion.
- Popularization of traps in fruits and vegetables attracted the farmers to adopt in larger area as a component of IPM practices.
- In water melons, musk melons, and cucumbers, mulching and drip irrigation practices are encouraged to maximise fruit quality and production.
- Demonstration of cultar in mango increase fruit set and yield, improve fruit quality when applied to the soil.
- Promotion of use of sulphur fertilizer in onion for good yield.
- Encouraging farmers to adopt good packaging for better price.
- Introduction of border cultivation of curry tree and drum stick for additional income.
- Demonstration of elite varieties in onion (GWO-1), Okra (GJO-3, GO-6), Cumin (GC-4), Coriander (Gujarat coriander-2).
- Promotion of salem variety turmeric in for good pricing of powder.
- Promotion of organic farming is double a farmer's income from drumstick and turmeric.
- Promotion and demonstration of different variety of vegetables like AVC-1 (Cow pea), GJB-3(Brinjal), Pusa Navin (Bottle guard), GJSG-2 (Smooth gourd), Pusa

Nasdar (Ridge guard) Gujarat Papdi-3 (Indian bean) and Gujarat kakdi-1 (cucumber) for high yield and good quality produce.

1.3 Animal husbandry

- ❖ Capacity building programme to raise improved breed such as Gir- cow and Jafarabadi- buffalo.
- ❖ Encouraging the farmers to adopt balanced nutrient management through enrichment of the fodder, mineral mixer and azolla.
- ❖ Demonstration of fodder sorghum variety GFS-5 and lucern variety GAL-5 high yielding green fodder sources.

1.4 Farm and non- farm enterprises

- ❖ Popularizing custom hiring centers to increase farmer income and promote farm mechanization.
- ❖ Popularizing natural resource conservation practices like protected cultivation, mulching and micro irrigation system.
- ❖ Promoting value addition of turmeric, drumstick, chili, milk, pulses and cereals.
- ❖ Promoting Self-Help Groups (SHGs) and Farmer Producer Organizations (FPOs) for a collective approach towards agriculture.
- ❖ Promoting animal husbandry practices i.e. clean milk production, healthy animal, and mineral mixture.

2. Impact on production and net income

Data regarding the doubling of farmers' income in the diverse areas of the Amreli district are shown in Table 1 regarding before and after the Krishi Vigyan Kendra's interventions. In field crops, farmer's income per acre of area was increased 81.84 per cent due to intervention of new varieties, IPM, INM practices, promotion of organic farming etc. In case of horticulture production per area decrease due to newly planted fruit crops but income was increase up to 69.53 per cent with high density planting, hybrid in vegetables and IPM practices. Apart from field and horticultural crops, increase in net income of 47.09 per cent in livestock and 144.93 per cent in farm and nonfarm enterprises. It may be due to conservation of breed like Gir (cow) and Jafrabadi (buffalo), balance nutrient, custom hiring center and value addition through small enterprises.

Table 1: change in production and net income.(n=111)

Crops	2016-17 per acre production	2020-21 per acre production	2016-17 per acre net income	2020-21 per acre net income	Increase in production	Increase in net income
Field crops	17.33	27.71	29063	52849	59.90	81.84
Horticulture	131.03	98.54	77096	130705	-24.80	69.53
Livestock	979.08	1198.46	34300	50453	22.41	47.09
Farm and nonfarm enterprises	520.00	739.87	111666	273500	42.28	144.93

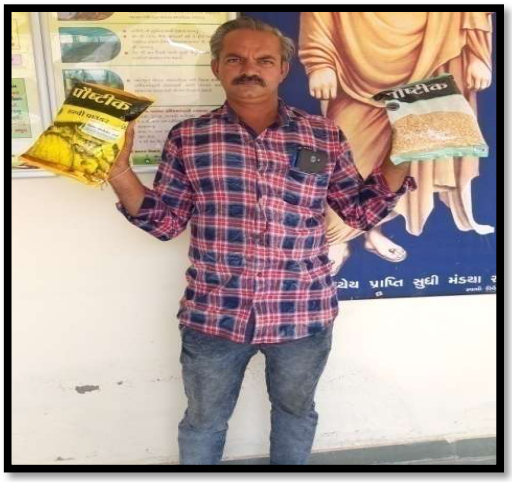
Among the benefited farm households, medium farmers accounted for 35.14 per cent land class followed by small farmers and large farmers whose where accounted 25.23 per cent and 24.32 per cent respectively. The percent change in household income was highest (127.26 per cent) small farmers (1.0 to 2.0 ha) followed by medium farmers (113.10 per cent). Small farmers (< 1.0 ha) recorded minimum (110.39 per cent) increase in household income (Table 2).

Table 2: Income level and change in household income by land class. (n=111)

Crops	Households (No.)	Share in total household (%)	Net income (Rs/household)		Change in household income (%)
			2016-17	2020-21	
Marginal (< 1.0 ha)	17	15.31	1497636	3150873	110.39
Small (1.0-2.0 ha)	28	25.23	3937504	8948225	127.26
Medium (2.0-4 .0ha)	39	35.14	11433363	24364800	113.10
Large (> 4.0 ha)	27	24.32	13178319	27978150	112.30
Total	111	100	30046822	64442048	114.47

Muskmelon production in plastic mulching at village Mota Bhandaria

Intercropping in cotton at village Karjala



Value addition *tur dal* and turmeric powder (organic) at village Halriya,

Impact of major Interventions

Name of intervention/ Technology	No of beneficiary	% of Adoption	Change in income (Rs/Unit)	
			Before	After
GJG-32	421	44.89	121472	147932
GCH-9	218	39.90	76715	100144
GJP-1	149	42.28	67502	87480
GG-5	325	53.53	58602	77042